Application No. 09/848,777
Filed: May 4, 2001
TC Art Unit: 1641
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REMARKS

Claims 3, 6-16, 18-21 and 30-32 are pending in the present application. Claims 15 and 16 are amended herein and Claim 3 is cancelled. Support for the amended claims can be found throughout the specification and is encompassed by the scope of the claims as originally filed. No new matter has been added.

Any amendments to the claims should in no way be construed as acquiescence to any of the Examiner's rejections and was done solely to expedite the prosecution of the application. Applicants reserve the right to pursue the claims as originally filed in this or a separate application(s).

Claim Rejection - 35 U.S.C. §112

Claim 15 has been rejected for improper antecedent reference. This claim has been amended to depend on claim 14. Thus, it is submitted that the rejection has been overcome.

Claim Rejections - 35 U.S.C. §103

The pending claims are rejected under 35 U.S.C. §103(a) over a combination of various prior art references. These rejections are respectfully traversed for the reasons indicated below and reconsideration is requested.

Applicants' invention is directed to a liquid composition comprising a colloidal suspension of a biomolecule-binding matrix material dispersed in the liquid, wherein particles of the matrix material in the colloidal suspension are of a defined particle size. The biomolecule-binding matrix material is made of nitrocellulose, polyvinyl difluoride or activated nylon. Replicate copies of a *biologically active* biomolecule are

distributed throughout the colloidal suspension and are bound to the matrix material particles. The biomolecules of the invention are specifically limited to proteins, peptides or oligopeptides. As indicated, e.g., in the Background section of the specification at p. 2, lines 12-14, systems such as the liquid composition of the invention, "are used, e.g., to identify or isolate molecular species contained within a biological preparation to be characterized (emphasis added)," which means that that the bound biomolecule must be *biologically active*, i.e., it must retain the biological activity that is relevant to its activity in the "biological preparation to be characterized."

1) **Rejection over a combination of Van Ness et al. and Wagner, Jr.**

The Examiner characterizes Van Ness at p. 3 of the Action and acknowledges that Van Ness does not teach immobilization of proteins. The Examiner then combines Van Ness with Wagner, Jr., stating that "Wagner, Jr. et al. teach a composition comprising protein immobilized on a solid support or matrix." With respect, the Applicants submit that the Examiner is attributing more to Wagner, Jr. than this patent actually teaches.

Applicants submit that the teaching of Wagner, Jr. cannot be expanded beyond what is described as the behavior of an immobilized *mismatch binding protein* (MBP). As taught at col. 22, Wagner, Jr. points out that the behavior of MBPs when immobilized as described is fundamentally different from that of other proteins. For example, at lines 18-19, the patent states, "Antibodies and MutS [the preferred embodiment MBP] differ fundamentally in the way in which they recognize varying structures." The patent points out that the comparative behavior

of even *other DNA binding proteins* towards DNA in solution compared to the immobilized form is not predictive of what happens to an MBP upon immobilization. As stated at lines, 57-61, "[s]tudies performed by the present inventor [show] that the DNA-binding protein recA from *E. coli* (which is not a mismatch binding protein) lost its ability to bind DNA after immobilization on nitrocellulose. This finding further supports the unexpected nature of the present invention." Furthermore, as pointed out in Wagner, Jr. at col. 16, line 66 - col. 17, line 8, the behavior of even the immobilized MBP itself is qualitatively different from its behavior in solution. As stated, "[I]mmobilized MBP . . . binds little or no homoduplex DNA even at relative high concentrations, in comparison with binding of homoduplex by MutS in solution . . . ."

Claim 16 as amended requires that the referenced colloidal suspension include replicate copies of *biologically active* protein or oligopeptide bound to the matrix material particles dispersed in the suspension. The examples in the specification, e.g., Example IV, which begins on p. 21, indicate that, in the method of the invention, as described above, the claimed composition is intended to include an immobilized protein for which the retained activity is *biologically relevant* to the activity of the protein in its natural setting. The assay described in this particular example is designed to test human serum samples for the presence of antibodies for the bound antigens.

Wagner, Jr. has exploited the *anomolous* behavior of *one category of proteins*, MBPs, when immobilized, in order to create a clever assay for mismatch-containing nucleic acid duplexes. However, the patent teaches away from expanding what it discloses

beyond the category of mismatch binding proteins. Otherwise, Wagner, Jr.'s *own patentability argument* would be defeated. The Applicants submit that it is settled law that the teachings of a reference cannot be expanded in a manner that would be contrary to, or defeat what is taught therein.

Therefore, Wagner, Jr. cannot be relied on for teaching, in combination with Van Ness et al., that the referenced colloidal suspension of claim 16 in the instant application include replicate copies of *biologically active* protein, peptide or oligopeptide bound to the matrix material particles dispersed in the suspension, as these terms must be understood from the teachings of the instant application. The Examiner is using an impermissible interpretation of the reference in hindsight to state otherwise. Thus, a combination of Van Ness et al. with Wagner, Jr. cannot overcome the deficiencies of the primary reference and the rejection is overcome.

2) **Rejection over a combination of Nagai et al. and Wagner, Jr.**

The Examiner characterizes Nagai et al. at p. 5 and acknowledges that Nagai does not teach immobilization of proteins. The Examiner then combines Nagai with Wagner, Jr. and declares the indicated claims to be obvious. The Applicants submit that even a combination of Nagai et al. with Wagner, Jr. would not overcome the deficiencies of the primary reference and teach the Applicants' invention as claimed. As the Applicants have described above, when Wagner, Jr. is properly characterized, it can be seen that the teachings of the reference cannot be expanded to include the limitation of the Applicants' claims that replicate copies of *biologically active* protein, peptide or oligopeptide be



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bound to the matrix material particles dispersed in the claimed suspension. Thus, the rejection is overcome.

3) **Rejection over a combination of Delair et al. and Wagner, Jr.; or Kawaguchi et al. and Wagner, Jr.; or Seul and Wagner, Jr.**

The Examiner has also combined Wagner, Jr., in turn, with the additional primary references Delair et al., Kawaguchi et al. or Seul to reject the Applicants' claims. However, the Applicants submit that even a combination of any of these additional references with Wagner, Jr. would not overcome the deficiencies of the individual primary references and teach the Applicants' invention as claimed. As the Applicants have previously stated, when Wagner, Jr. is properly characterized, it can be seen that the teachings of the reference cannot be expanded to include the limitation of the Applicants' claims that replicate copies of *biologically active* protein, peptide or oligopeptide be bound to the matrix material particles dispersed in the claimed suspension. Thus, the Applicants submit that these additional rejections are overcome.

## CONCLUSION

Based on the foregoing, reconsideration and withdrawal of all the rejections and allowance of application with all pending claims are respectfully requested.



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The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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